To support the goals detailed in this: https://docs.google.com/document/d/19Hw8XUcajburrEUXPSHRsG7afhIpiityxB_y3zbINTA/edit

Driving Paradigm : Storytelling ~ Narrative structure

Views:

There won't be strict separation between each views, we want to adapt the views to fit user's goals when interacting with the app.

Introduction view : stresses identity and interaction input/configuration, instructable -use user set defaults for what they think they use for the boundary max/min

Dat Viz view : a high-level summary of the data and a salient indication of energy usage/whether goals are met. It's like a screensaver when user is not interacting with the app. It's the first view user sees when the app is activated.

CONCERN: *when the app should be activated, not every time user passes, but should remind him/her to look at it. Sensor?* Answer: If the ambiant view can provide salient and glance-able information, then it should be activated when user passes.

Questions to consider: - *What feedbacks/notifications should always be present to guide behavioral changes?*

- how to present the numbers, in traditional visualization techniques, or more graphical, animated representations?

Answer: Hope that ambient is more "drawing in" than useful Options we're thinking: trees, or other metaphors

Main view : This is where data visualization, triggers of control, boundaries setting happen. Views will adapt to user's need based on the actions he/she takes.

- compare today's performance with former days -> use visualization not our interpretations. Emphasize the positive changes!<-cultural differences NOTE: We don't interpret data except in terms of goal deviations.
- compare whether the consumption exceeds energy production
- compare whether the goals are met

About comparison: According to the research, self-comparison is most and always effective.

detailed data visualization of energy usage over time, including electricity and water. The dimensions could be: spaces (living room, bedroom), appliances

Energy -> break downs into outlets, appliances, heating water, by categories/rooms, circuit level, PV can get to panel level *(how low level can we get? individual light?)* Resource/water

Questions to consider: - How fine grained the data would be Answer: According to the research, data granularity needs to be down to individual appliance/fixture. User should be ale to "drill down", and have multiple view options to explore (such as different time granularity).

- Dimensions
- VIsual encodings and interactions
- How to guide behaviors in this view
- Linking to real-time/control view
- Linking to goals view

About Goal setting : for homeowners to set goals for energy saving -- not necessarily goal oriented, we set "boundaries", max/min, and provide quantitative/qualitative comparison based feedback to give them a sense of how much a new boundary differs from their past.

IMPORTANT: There needs to be a standard that says whether the consumption is too much or ok. These standards will be set by user, how good they want to be at energy saving. "Net zero" will just be a side-effect we tell them.

Jason's answer: should provide default goals, based on measures/standards of comparable households/neighbors. User can adjust goals, the effects are immediately shown for feedbacks. Goal achievement is not just binary.

Questions to consider: - How are goals defined: I need to consume XXX electricity every day / I need to stay net 0 all the time - How to set goals, any expert guidance? Answer: Smart defaults based on some user input in the instruction/configuration view and standard statistics.

- Interactions to set goals
- What if goals are met/not met? Linking to History view to inspect the reasons?

Real-time/control view: real-time monitor and control for appliances.

This will be a somewhat separate part of our app. Via it user can control HVAC and lights. It's triggered through the main view as a direct action to take. But there should also be a shortcut to control, as the app will be the only control point of HVAC.

Bridging Views : concepts: book logic circles/compass triangles/threads

/**_-_-_-_-_-_-_-_-_-_-_-_-NOTES-_-_-_-_-_-_-_-_-_-_-_-_-*/

Things to Consider : -setting a goal tells you history and how to achieve that goal

Markers: (should they be in ambient or main view) temp humidity weather how much energy/resource has consumed today how fast is energy/resource consumption how many outlets are in use how many lights are on, which of them where water is running

Should we link behaviors to bigger real world impacts? Such as telling user that how fast they're speeding global warming, or draining the resources on earth?

/**_-_-_-_-_-_-_-_-_-_-_-_-Research-_-_-_-_-_-_-_-_-_-_-_-*/ Design of Eco-Feedback Technology - UW http://dub.washington.edu/djangosite/media/papers/tmpssyQcm.pdf

Wireless Sensors for Home Monitoring http://www.orcatech.org/papers/home_monitoring/08_Mukhopadhyay_wireless_sensors.pdf

Types of Quantitative Display http://www.perceptualedge.com/articles/visual_business_intelligence/types_of_quantitative_display.pdf

Designing Eco-Feedback Systems for Everyday Life - Chi http://delivery.acm.org/10.1145/1980000/1979252/p2135-strengers.pdf?ip=171.66.173.3&acc=ACTIVE%20SERVICE&key=986B26D8D17D60C8DB53387753A2CC53&CFID=311792113&CFTOKEN=27273951&__acm__=1365719907_d937f20a2953db9d83066dbed549a742

Paolos Papers: http://www.paulos.net/pubs.html -Beyond Energy Monitors http://www.paulos.net/papers/2012/BeyondEnergyMonitorsCHI2012.pdf

People Garden: Creating Data Portraits for Users http://smg.media.mit.edu/papers/Xiong/pgarden_uist99.pdf

Cultivating Energy Literacy: http://dl.acm.org/citation.cfm?id=2466154

The Dubuque Electricity Portal http://researcher.watson.ibm.com/researcher/files/us-rschloss/SSDe_ElectricityPortal_CHI2013.pdf

Froehlich et al. http://www.cs.umd.edu/~jonf/publications.html

Inspiration Links http://www.artefactgroup.com/#/content/serenity-a-home-os-with-a-heart